Final Schedule for the
2022 SPRUCE All-Hands Meeting
3, 4 and 5 May 2022

Proposed Meeting Details:

- We will meet using the Zoom teleconference capability.
- Individual talk times will be limited to 10 to 15 minutes as shown in the following schedule including specific questions and should be recorded and submitted ahead of the meeting.
- All meeting presentations will be posted on the SPRUCE web site for conference and future reference as with all SPRUCE group deliberations.
- Presentation times are only approximate due to shifting Q&A engagement.

2 May 2022

1830 EDT: Advisory Panel Pre-Meeting Brief with Paul Hanson and Randy Kolka
[Connection by independent Microsoft Team Invitation; Include DOE BER Program Managers if available]

DAY 1 – 3 May 2022

1100 EDT (0800 PDT) —

T01 – Welcome and Introductions
Advisory Panel Members and SPRUCE Participants

T02 – Hanson PJ et al.
Six Years of SPRUCE operations: Treatment performance and isotopic additions –

T03abc – Pearson K and Maki B
Keeping SPRUCE Operational – Discussion of routine summer and winter issues, breakdowns/repairs and likely longevity of the infrastructure.

~1200 EDT (0900 PDT) Phenology and Seasonal Response Issues

T04 – Schädel C et al.
Vegetation phenology using Phenocam and ground observations – 10 min

T05 – Krassovski M
SPRUCE Phenology Movies and Drone Flight Plans for 2022 – 10 min

T06 – Seibert A, Glenn N, Enterkine J
A review of Terrestrial Lidar Scanning data collections and products available for use

T07 – Campos-Arguedas F, North M, Kovaleski A
Effects of whole ecosystem warming on cold hardiness of woody perennials

~1300 EDT (1000 PDT) 2022 SPRUCE Honors!

T08 – 2022 SPRUCE Honors Slides

1315 EDT (1015 PDT) — 30 Minute Break

~1345 EDT (1045 PDT) —

T09 – **Introduction of All-Hands Group Open Discussion Questions**

- **What did we learn from the drought of 2021?**
- Interpreting nutrient cycles
    a. Are the plants taking advantage of increased N and P availability?
    b. Are we losing N and P out of the system?
    c. How can we resolve shrub access to N in ELM? (Xiaojuan's increasing of the rooting depth to allow plants to get sufficient N and P "works" but it isn't what we see happening in the field)
- Where did the elevated CO_2 go? (discussion of the general lack of eCO2 effect)
- **Proposed fate of SPRUCE manipulations beyond 2025?**
- What future small group meetings would help the group?
    a. Taking advantage of isotopic labels
    b. Scaling results to peatlands in general

~1400 EDT (1100 PDT) — General MODEX Presentations
[Other modeling discussion spread throughout]

T10 – Ricciuto D et al.
SPRUCE MODEX philosophy and overview of current modeling efforts – 10 min
MODEX – how can we better integrate empiricists and modelers across the project?

T11 – Gu L et al.
Using a complete model of photosynthesis to improve carbon cycle modeling

T12 – Mao J, Wang Y, Ricciuto DM, Shi X, Hanson PJ
Above- and Belowground Phenology Modeling of ELM Using the SPRUCE Observations

T13 – Yang X et al.
Evaluating the effects of warming and elevated CO2 on peatland ecosystems using ELM-SPRUCE

T14 – Shi X et al.
The preliminary results and the insights of ELM_SPRUCE driven by the plot scale new forcing data

T15 – Yuan F, Ricciuto D, Xu X, Feng X, Kolka R, Sebestyen S, Roman D, Griffis T
Comparison of ELM simulations of methane emissions from fen and bog peatlands in northern Minnesota

~1530 EDT (1230 PDT) — Carbon Cycle and NPP

T16 – Hanson PJ, Phillips JR, Glenn N et al.
Shrub and Tree growth at SPRUCE & a terrestrial laser scanning (TLS) update –

T17 – LaMontagne JM, Lawrence B, Stoycheva T, Leeper Ac, Pearson KJ, Phillips JR, Hanson PJ
Reproduction in Picea and Larix

T18 – Stoycheva T, Lawrence B, Leeper AC, Pearson KJ, Phillips JR, Hanson PJ, LaMontagne JM
Variation in cone morphology and seed characteristics across SPRUCE treatments

T19 – Malhotra A, Iversen C, Defrenne C, Ofiti N
Root responses to warming: past, present and future questions

T20 – Weston D et al.
Sphagnum microbiome productivity

1645 – Advisory Panel Breakout Time

1645 – Simultaneous Breakouts for other SPRUCE participant interactions

- Nutrients
- Modeling

1730 – Day 1 Zoom Session Ends

DAY 2 – 4 May 2022

1100 EDT (0800 PDT) Carbon Cycle Summary and Related Carbon Cycle Research

T21 – Hanson PJ, Phillips JR, et al.
SPRUCE Carbon cycle 2016 Through 2022
- *CC Estimates for all? Years*
- Update on automated flux chamber additions

T22 – Griffiths NA, Kolka RK
Litter and peat decomposition responses to warming and elevated CO_2

T23 – Eggert SL et al.
Results of experimental warming, elevated carbon dioxide, and drought on a 3 year moth outbreak at SPRUCE

~1145 EDT (0845 PDT) Water Cycle

T24 – Stelling JM, Sebestyen SD, Griffiths NA and Oleheiser KC
Synthesis and comparison of bog water stable isotopes and water level response to changing environments in SPRUCE

T25 – Peters J, Warren J
Impact of Whole Ecosystem Warming on Plant Water Transport in Boreal Bog Trees Under drought

~1215 EDT (0915 PDT) Plant Physiology

T26 – Warren J et al.
Woody Carbon Physiology and Ecophysiology updates

T27 – Peters J et al.
Evidence of hydraulic adaptation in Boreal Bog species

~1300 EDT (1000 PDT) — 30 Minute Break

~1330 EDT (1100 PDT) Methane Cycle

T28 – Wilson R, et al.
Stable and radiocarbon isotopic studies reveal mechanism and pathways of greenhouse gas production

T29 – Chanton J, Verbeke B, Baysinger M, Lamit L, Lilleskov E, Cory A, Wilson R, Kostka J, Hanson PJ, and Many Others
Peatland decomposition: Carbohydrates and Phenolic compounds as indicators and inhibitors

T30 – Zhang J, Yuan F, Ricciuto DM, Hanson PJ, Shi X, Bridgham S, Keller, J, Xu X
Drought impacts on methane emission in a temperate peatland under warming and elevated CO_2.

~1415 EDT (1115 PDT) <u>Nutrient Cycle Research</u>

T31 – Iversen CM
Whole-ecosystem warming increases plant-available nitrogen and phosphorus in an ombrotrophic bog

T32 – Griffiths NA and Sebestyen SD
Porewater and outflow chemistry responses to warming and eCO_2 – Natalie Griffiths, Stephen Sebestyen and Keith Oleheiser

T33 – Salmon V
Experimental Manipulations at SPRUCE: Consequences for Nutrient cycling in Vegetation & Peat

T34 – Pierce C, Kolka R, Sebestyen S, Stenberg C, Griffiths N, Gutknecht J, Nater E, Toner B
The Response of Total Mercury in Peat and Porewaters to Changing Temperature and Carbon Dioxide

T35 – Felice M, Pierce C, Toner B, Nater E, Kolka R, Sebestyen S, Gutknecht J
Response of sulfate reduction rates to warming and elevated CO_2 at SPRUCE

~1530 EDT (1300 PDT) – Discussion Topics in 3 Breakout groups.

- What did we learn from the drought of 2021?
- Taking advantage of isotopic labels
- Nutrient cycles and modeling

~1645 – Advisory Panel Breakout Time

~1645 – Other Breakouts for other SPRUCE participant interactions

1730 – Day 2 Zoom Session Ends

DAY 3 - 5 May 2022

1100 EDT (0800 PDT) — Microbiome Responses

T36 – Schadt C, Roth S
Microbial community dynamics during decomposition of SPRUCE chamber peat ladders and update on SPRUCE microbial biomass characterization

T37 – Roth S, Schadt C
Microbial community metagenomic analyses over 4 years of warming and CO2 enrichment.

T38 – Song T, Petro C, Kolton M, Duchesneau K, Schadt C, and Kostka JE
Porewater microbial community dynamics as an indicator of peatland ecosystem change in response to climate drivers

T39 – Duchesneau K, Defrenne CE, Moore JAM, Malhotra A, Petro C, Childs J, Hanson PJ, Iversen CM, Kostka JE
Uncovering the root microbiome of woody plants in peatlands and its response to climate change

T40 – Kostka JE, Wilson R, Duchesneau K, Tfaily M, Petro C, Song T, Schadt C, Chanton J
The role of plant-derived persistent compounds in peatland soil carbon sequestration under climate change: revisiting the 'enzyme latch' hypothesis.

T41 – Petro CC et al.
Effects of warming and elevated [CO2] on N-fixation and its coupling to methane oxidation in the Sphagnum moss microbiome

T42 – Buell Z, Schadt C, Mayes M, Phillips JR, Kolka R, Toner B, Gutknecht J
Comparison of microbial analysis techniques in assessing belowground community structure and activity at the SPRUCE site

Data Discussion

T43 – Velliquette T, Ruggles T
Data Brief

1340 EDT (1015 PDT) — Group Discussion on SPRUCE Beyond 2025

T44 – **Future Options for SPRUCE Operations: An Ongoing Discussion that Requires a Conclusion**
Open Discussion – All participants

1430 EDT (1130 PDT) — Final Break for the Advisory Panel

T45 – Simultaneous break/discussion time for the SPRUCE group
T46 – Advisory Panel Feedback
1630 – Day 3 Zoom Session Ends